

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application for United States Patent

**PORTABLE ARTIFICIAL CAMPFIRE DEVICE**

INVENTOR:

Michael E. Davis  
Tijeras, NM 87059

A United States Citizen

Attorney Docket No.: 1000-1303

EXPRESS MAIL NO.: **EU572155907US**

## PORTABLE ARTIFICIAL CAMPFIRE DEVICE

### APPLICATION PRIORITY

[001] The present case claims the benefit of priority to a provisional patent application, Serial No. 60/396,815, entitled "Portable Smokeless Campfire," which was filed July 15, 2002 by Michael E. Davis.

### FIELD OF THE INVENTION

[002] The present invention is generally related to compressed gas fed appliances for use outdoors. Additionally, the present invention is related to campfire equipment, outdoor barbeque equipment and forest fire prevention methods. More particularly, the present invention is related to an artificial campfire systems adapted for use with pressurized or compressed gas such as propane and for deployment as a replacement to coal and wood as fuel typically used for fire contained within physical campground facilities.

### BACKGROUND

[003] A traditional and almost essential part of camping in the outdoors is having a wood-burning campfire. An open campfire provides warmth, a cooking source and a pleasant visual experience, particularly in the evening. Unfortunately, there are many times that wood burning and open campfires are prohibited due to dry forest or environmental conditions. When such dry conditions prevail, fire danger is high. In such instances, stewards of the forests and states parks restrict and

even prohibit the burning of wood of any sort, and particularly open campfires. When such prohibitions are in force, traditional gas stoves can generally be utilized for cooking.

[004] Campfires built within manmade fire pits, or rock campfire rings, have historically been the fire of choice used by campers to provide outdoor heat, a cooking source and the pleasant appearance only an evening campfire can provide for campers to gather around at the end of the day. Unfortunately, such campfires pose one of the highest risks of causing a forest fire, mostly because active timbers or coals are left behind after the camping trip is over. Portable devices that utilize wood, charcoal, or compressed gas in combination with other fuel sources such as wood and charcoal also present an elevated risk of causing forest fires in campground settings because of the use of combustible material that is generally left behind at campground facilities where rekindling of a fire can occur even if campers do act diligently to active fuel before leaving the facilities.

[005] When stewards of national forests and states parks attempt to lessen the risk of forest fires caused by campfires by imposing campfire bans, portable, self-contained devices that use compressed gas, such as bottled propane, can be used as cooking devices in the great outdoors. Portable barbeques or cook stoves, however, fail to offer campers, hikers and outdoor enthusiast the campfire experience. Some successful attempts have recently been made to provide for an artificial campfire device that can operate on pressurized gas.

Such a device is taught in U.S. Patent Nos.: 6,289,887, 6,044,836 and 5,901,697 issued to Oliver, Jr., et al.

[006] The Oliver, Jr., et al device describe in the above-cited patents does not require the use of real wood so that it can be operated during campfire bans. The Oliver, Jr., et al system can be utilized as a cooking device, includes a base receptacle which defines an open top, the base receptacle being adapted for placement on a ground surface. A burner member described in the patents is positioned within the base receptacle and is adapted to provide a flame of variable height. A fuel control mechanism is adapted for coupling a pressurized fuel source with the burner member for controlling the flow of fuel to the burner member and the size of flame emitted by the burner member. A plurality of artificial refractory log members complete the Oliver, Jr., et al system and are adapted for assembly in crisscross fashion to form a log cluster in the base receptacle.

[007] The Oliver, Jr., et al patents all describe shortfalls of the prior art being that the prior art devices do not utilize artificial or refractory logs, are typically permanent installations and are not easily adaptable for outdoor use. Oliver, Jr., et al, however, still presents a system consisting of several components (e.g., a base receptacle, logs, a fuel tank, and a burner member) that add weight and space requirements to a camper's payload. An artificial system such as that described by Oliver, Jr., et al would not likely be used by most backpackers or

hikers whom already have a number of necessary provisions that must be physically transported on their backs during an outdoor adventure.

[008] There is an ongoing need within the various state and national forest service agencies to provide outdoor enthusiasts an acceptably safe alternative to an open campfire that requires combustible material as its source for fuel. The present inventor believes he has addressed the forgoing need with his portable artificial campfire device.

## SUMMARY OF THE INVENTION

[009] It is a feature of the present invention to provide a portable artificial campfire device which operates only on pressurized or compressed gas is portable and can be adapted for use in existing campground facilities such as pre-fabricated campfire rings and manmade campfire rings.

[010] Another feature of the present invention is to provide a portable artificial campfire device that it can be operated during wood burning prohibition periods.

[011] It is yet another feature of the present invention is to provide a gas operated portable artificial campfire device that can also be utilized as a cooking source.

[012] It is yet another feature of the present invention to provide a fuel control mechanism that can control the height and intensity of flames emanating from the portable artificial campfire device.

[013] It is yet another feature of the present invention to provide a portable artificial campfire device that includes a burner element having a plurality of orifices of varying density dispersed throughout the surface of the burner element.

[014] It is yet another feature of the present invention to provide a burner element as part of a portable artificial campfire device that can be formed for easy adaptation to and use with existing campfire rings.

[015] In accordance with carrying out features of the present invention, an artificial, smokeless campfire device is disclosed. The device includes a burner element having a plurality of orifices of varying density dispersed throughout the burner element, the burner element being further adapted to provide a flame of variable height and intensity and also easily adaptable for placement in existing campground facilities including campfire rings, and a fuel control mechanism coupled to the entry port of the burner element and further adapted for receiving pressurized or compressed gas from a fuel source is provided for controlling the flow of the gas to the burner element. The fuel control mechanism can affect the height and intensity of gas flames emanating from orifices bored into the burner element by its direct control of pressurized fuel flowing into the burner element. The burner element can be formed from tubular steel into a spiraled shape. The entry port can be located at the perimeter of the spiraled tubing and the spiral tubing can terminate into a gas seal, such as a cap, near the spiraled tubing's center.

[016] These and other features of the present invention will be further appreciated from the following detailed disclosure and appended claims.

## BRIEF DESCRIPTION OF THE DRAWINGS

[017] The accompanying drawings which are incorporated in and form a part of the specification illustrate preferred embodiments of the present invention and, together with a description, serve to explain the principles of the invention.

[018] FIG. 1 is a top plan view of elements included in a preferred embodiment of the present invention, a portable artificial campfire device;;

[019] FIG. 2 is a perspective view of a burner element in operation wherein a hot spot is highlighted in accordance with an embodiment of the present invention; and

[020] FIG. 3 is a perspective view of the present invention deployed a simulated campfire setting together with a fuel source and an optional hose.



## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[021] Referring to FIG. 1, a portable artificial campfire device 10 is shown including a burner element 15 having a plurality of orifices 20 of varying density formed within and throughout the surface of the burner element 15. Also shown to be included as a necessary part of the portable artificial campfire device 10 is an adjustable gas valve 25 coupled to a gas entry port 13 of the burner element 15. The adjustable gas valve 25 functions as a fuel regulator and enables control over the amount of fuel that can flow from a pressurized or compressed fuel source to the burner element 15. Pressurized and compressed fuel will hereinafter be referred to only as pressurized gas as it should be well understood by those skilled in the art that compressed fuel in gas form such as propane is under pressure within any containment system within which it is kept, such as portable propane tanks.

[022] The burner element 15 can be formed in the shape of a spiral as shown in FIG. 1. Although the shape of the burner element 15 can be formed in other shapes of continuous tubing, it should be appreciated by those skilled in the art after reading this description that a spiral shape will disperse burning flames throughout a broad area within a campfire setting such as a campfire ring. The burner element can be fabricated using steel tubing and can be fabricated in a variety of sizes. It should be appreciated by those skilled in the art after fully appreciating the present disclosure that steel tubing available from industry can

be obtained that is generally malleable and would therefore be useful for gas delivery as part of the present invention where it can be physically manipulated or formed, depending on its overall thickness. Where the burner element 15 is formed from tubular steel into a spiral, the gas entry port 13 can be located at the perimeter of the spiraled tubing and the spiral tubing can terminate into a gas seal 18 near the spiraled tubing's center, end. The gas seal 18 can be provided in the form of a cap at the end of the steel piping.

[023] Referring to FIG. 2, the burner element 15 is shown with a plurality of orifices densely formed in areas of the burner element 15 that can be referred to as a hot area 22. A hot area 22 is ideally suited to enable cooking over the burner element 15. Other areas of the burner element 15 wherein orifices are not as densely formed as orifices in the hot area 22 are merely provided for the production of aesthetic flames 23 emanating from the burner element 15. It should be appreciated by those skilled in the art that the orifices formed in the burner element 15 should be formed so that they are generally facing in an upwardly direction from the burner element 15, away from the ground or earth where it would lie when deployed.

[024] Referring to FIG. 3, the portable artificial campfire device 10 is shown deployed in a man made campfire ring 33. An optional flexible fuel hose 35 is shown coupled to the adjustable gas valve 25, opposite the burner element 15. Also shown in FIG. 3 is a pressurized gas source 38 provided in the form of an

optional propane tank that can be coupled to an end of the flexible fuel hose 35, opposite the flexible fuel hose's coupling to the adjustable gas valve 25.

[025] It is preferred that pressurized fuel provided to the portable artificial campfire device be provided in the form of compressed propane (e.g., LP gas), which is widely distributed in refillable and disposable containers. It should already be appreciated by those skilled in the art that LP gas can be contained in a variety of fuel tank sizes adapted for use with flame producing systems.

[026] During use in a campground setting, it can be appreciated that the portable artificial campfire device 10 can be easily placed into a typical, existing campfire ring 33, such as prefabricated concrete facilities or man made campfire rings formed from rocks, soil or other nonflammable material taken from the environment surrounding a campground, as is suggested in FIG. 3. It should also be appreciated that the burner element 15 can be covered with small rocks or packaged (store bought) lava rocks and the like, which are known to enhance flame scatter and heat generation. It can be appreciated, however, that rocks or other noncombustible material borrowed from nature would substantially reduce a user's payload when planning an outing.

[027] As can be seen from the above, the present invention provides an artificial campfire device that is self-contained, does not require additional fuel sources and can be used for a cooking heat source. The device of the present invention

is designed to be portable, which should encourage broader use by outdoor enthusiasts including back pack equipped hikers. The present invention is safe and is ecologically minded due to the fact that it does not burn fossil fuel sources such as wood, charcoal and the like, thereby avoiding smoke and other emissions. Therefore, the present invention provides the closest thing available to an open campfire built within traditional facilities such as existing campfire rings during times that traditional wood burning campfires are prohibited.

[028] The foregoing description and the illustrative embodiments of the present invention have been described in detail in varying modifications and alternate embodiments. It should be understood, however, that the foregoing description of the present invention is exemplary only, and that the scope of the present invention is to be limited to the claims as interpreted in view of the prior art. Moreover, the invention illustratively disclosed herein suitably may be practiced in the absence of any element which is not specifically disclosed herein.